

## **REMARKS**

This Amendment is in response to the Office Action mailed April 5, 2007. Applicant respectfully traverses the rejection in its entirety because the rejection is improper and a *prima facie* case of anticipation has not been established. Reconsideration in light of the amendments and remarks made herein is respectfully requested.

### ***Request for Examiner's Interview***

The Examiner is respectfully requested to contact the undersigned attorney if, after review, such claims are still not in condition for allowance. This telephone conference would greatly facilitate the examination of the present application. The undersigned attorney can be reached at the telephone number listed below.

### ***Improper Rejection***

The Office Action generally recites Figure 1 and claims 1-15 of Byszewski as support for the rejection. No other evidence or support has been provided, which is in violation of MPEP §706 and 37 C.F.R. §1.104(c)(2). More specifically, while the Byszewski reference is clearly a complex reference, the Examiner has failed to clearly explain or even identify the pertinence of Byszewski for each of the rejected claims. Hence, the rejection should be withdrawn or at least reconsidered and a new non-final Office Action be issued that clearly identifies, for each claim, the alleged teachings found in Byszewski.

In addition, it is impermissible for the Examiner to reject pending claims based on the explicit content within the claims of Byszewski. Applicant submits that the referencing claim language to support the §102 rejection is impermissible because, as the Examiner is aware, a claim "is no measure of what [a patent] discloses." In re Beeno, 226 USPQ 683, 686 (Fed. Cir. 1985). Thus, Applicant respectfully requests the Examiner to specifically point out where in the *specification* each and every limitation is present in lieu of relying on the claims.

***Rejection Under 35 U.S.C. § 102***

Claims 1-21 were rejected under 35 U.S.C. §102(b) as being anticipated by Byszewski (U.S. Patent No. 5,352,345). Applicant respectfully traverses the rejection because a *prima facie* case of anticipation has not been established. However, before discussing the lack of teaching, a brief description of the teachings of Byszewski may be appropriate.

As shown in Figure 1, Byszewski describes a three compartment water splitter including a first (Acid) compartment between the cation layer of bipolar membrane 6 and anion membrane 8; a salt compartment between anion membrane 8 and cation membrane 4; and a base compartment between cation membrane 4 and anion layer of bipolar membrane 7. *See column 3, lines 53-58 of Byszewski.*

The spent regenerant solution is introduced to the water splitter via line 9, and fed into the salt compartment via line 10. Aqueous solutions are introduced to the cell stack via lines 11 and 12. The aqueous solutions are fed into the acid and base compartments via lines 14 and 16, and lines 13 and 15, respectively. The aqueous solutions are preferably water (or a dilute acid or base solution) fed respectively to the acid and base compartments. When a direct current is passed across the water splitter, cations will migrate toward the cathode and anions will migrate toward the anode. The bipolar membranes split water into  $H^+$  and  $OH^-$ . The cation membranes (3,4,5) allow cations to pass through, but acts as a barrier to anion. Similarly, the anion membranes (6,7) represented by membranes allows anions to pass through but acts as a barrier to cations. *See column 3, line 59 to column 4, line 5 of Byszewski.*

Thus, under the influence of a direct current, the anions in the salt compartment migrate across anion membrane 8 into the acid compartment, and combine with the hydrogen ions generated by bipolar membrane 6 to form acid. Similarly, the cations in the salt compartment migrate across cation membrane 4 into the base compartment and form base with the hydroxide ions generated by bipolar membrane 7. The acid and base are respectively formed in the compartments formed between the cation layer of bipolar membrane 7 and cation membrane 5 and anion membrane 8 and the anion layer of bipolar membrane 6. The acid formed in the unit is removed via lines 18 and 20 and recovered via line 22. The base formed in the unit is removed

via lines 19 and 21 and recovered via line 23. Depleted salt solution is removed from the unit via line 24 and recovered via line 25. *See column 4, line 5-22 of Byszewski.*

Upon review of claim 1 for example, Applicant respectfully traverses the outstanding §102 rejection because a *prima facie* case of anticipation has not been established. In particular, upon consideration of the salt compartment in combination with the cation membrane 4 and anion membrane 8 constituting an impurity separation subsystem, where the impurity is considered to be salt, it is noted that the subsystem does not remove the impurity from feed water. Instead, a depleted salt solution is produced. *See column 4, lines 20-22 of Byszewski.*

Moreover, it is unclear how a three compartment water splitter can be considered to feature an electrolytic membrane separation (EMS) subsystem that is in fluid communications with the impurity separation subsystem and receives both the “reject solution” from the impurity separation subsystem (depleted salt solution) and an *electrically conductive* solution. *Emphasis added.* Clearly, there is no teaching or suggestion of any transfer of the selected impurity to an electrically conductive solution as claimed. Hence, Applicant respectfully requests that the Examiner to withdraw the outstanding §102 rejection as applied to independent claim 1.

With respect to independent claim 13, Applicant respectfully submits that the Office Action is devoid of any discussion directed to the following limitations:

- 1) a first cell frame that comprises an anolyte compartment to house an anode. This anolyte compartment comprises a first in-flow port and a first out-flow port that is positioned above the first in-flow port;
- 2) a second cell frame having a catholyte compartment to house a cathode. The catholyte compartment comprises a second in-flow port and a second out-flow port that is positioned above the second in-flow port;
- 3) at least one membrane positioned between the anolyte compartment and the catholyte compartment; and
- 4) the EMS subsystem as allegedly taught by Byszewski is adapted to (i) receive a brine solution (brine solution used to regenerate an ion exchange resin and having an elevated level of at least one type of impurity) into one

compartment of the anolyte and catholyte compartments, (ii) receive a conductive solution having a volume substantially less than a volume of the brine solution into a different compartment than the compartment supplied with the brine solution, (iii) remove the at least one type of impurity from the brine solution, and (iv) produce a resultant brine solution that may be reused for regeneration of an ion exchange resin.

Hence Applicant respectfully submits that the Examiner to explicitly identify each of the limitations set forth above as allegedly located in Byszewski or to withdraw the outstanding §102 rejection as applied to independent claim 13 and claims 14-16 dependent thereon.

With respect to independent claim 17, Applicant respectfully submits that the Office Action is devoid of any discussion directed to the following limitations:

- 1) providing an electrolytic membrane separation (EMS) subsystem that comprises a plurality of compartments. *Each of the compartments includes an electrode being one or an anode and a cathode;*
- 2) supplying a *brine solution having a first volume and an increased level of an impurity* to a first compartment of the plurality of compartments;
- 3) supplying a *conductive solution to a second compartment* of the plurality of compartments, the conductive solution *having a second volume substantially less than the first volume*; and
- 4) energizing the electrodes to cause ions associated with the impurity to migrate from the reject solution to the second compartment; and
- 5) outputting the conductive solution having the impurity as waste.

Applicant respectfully submits that the Examiner to explicitly identify each of the limitations set forth above as allegedly located in Byszewski or to withdraw the outstanding §102 rejection as applied to independent claim 17 and claims 18-21 dependent thereon.

***Conclusion***

Applicant reserves all rights with respect to the applicability of the doctrine of equivalents. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,  
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